

**ABSTRACT OF THE DISCLOSURE**

A wideband erbium-doped optical fiber amplifier is disposed among an optical fiber through which a first and second band-band optical signals (for example, the C-band and L-band) are transmitted and forms a first optical path and a second optical path parallel to each other. The wideband erbium-doped optical fiber amplifier comprising a first amplifying section disposed on the first optical path, including a first erbium-doped optical fiber to amplify the first-band optical signals, a filter to gain-flatten the amplified first-band optical signals, wherein a reflected portion of the first band optical signal by the filter is directed to the second optical path; and a second amplifying section disposed on the second optical path, having a second erbium-doped optical fiber to amplify received second-band optical signals, wherein the reflected first-band optical signal is used to pump the second erbium-doped optical fiber.